

## **REMARKS / ARGUMENTS**

### **Status of Claims**

Claims 1-26 are pending in the application and stand rejected. Applicant has canceled Claims 4 and 11, amended Claim 12, and added new Claims 27-31, leaving Claims 1-3, 5-10, and 12-31 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

### **Objections to the Specification**

The Examiner objected to the title of the invention as not being descriptive, and requested that a new title be provided that is clearly indicative of the invention to which the claims are directed.

Applicant respectfully traverses this objection for the following reasons.

Where a title of the invention is technically accurate, descriptive, and clearly indicative of the invention to which the claims are directed, it is in compliance with MPEP §606, 37 CFR §1.51, and 35 U.S.C. §154.

Claims 1-3, 5-10, and 27-31, are directed to “A magnetic field shimming system for an MRI magnetic field generating assembly”, Claims 12-20 are directed to “A method for shimming an MRI magnetic field generating assembly”, and Claims 21-26 are directed to “An MRI magnetic assembly.” (See claim preambles). As claimed, Applicant respectfully submits that the claims are collectively directed to a “method and system for shimming an MRI magnet assembly”, which is the title of the invention.

In view of the foregoing, Applicant respectfully submits that the title of the invention is descriptive of the invention and is clearly indicative of the invention to which the claims are directed.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection.

**Rejections Under 35 U.S.C. §103(a)**

Claims 1-26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aoki et al. [U.S. Patent No. 6,275,128 B1, hereinafter Aoki] further in view of Rapoport [U.S. 2002/0097122 A1, hereinafter Rapoport].

The Examiner acknowledges that Aoki does not disclose a plurality of concentric geometric shapes each having at least five sides. To cure this deficiency, the Examiner looks to Rapoport at Paragraph [0061] and Figures 9 and 10 for the disclosure of shapes being pentagon, hexagon, heptagon or octagon. (Paper 5, paragraph 4, page 3).

Applicant traverses the Examiner's rejections for the following reasons.

Aoki discloses an MRI magnetic field generator where the magnetic field uniformity is adjustable by utilizing a shim holder 10 having a holder disk 13 for holding a plurality of magnetic pellets (shims) 15, a base disk 11, and a cover disk 14. (Col. 2, lines 58-64, col. 3, lines 49-63, and Figures 1 and 2).

Rapoport discloses a field adjusting mechanism for MRI systems that utilizes a shim block 186 having channels 188 of varying shapes, *where the shims (shim blocks 186) are of regular polygonal shape, such as hexagons, pentagons, octagons or irregular or singular shapes that are fitted within the correspondingly shaped channels 188*. (Paragraph [0001], [0060] and [0061], and Figures 8-10). (Emphasis added).

As referenced, Aoki and Rapoport are notably absent *a plurality of shims arranged along a plurality of concentric geometric shapes each having at least five side*, and are notably absent at least one shim of the plurality of shims *having face surfaces aligned with* a direction of the magnetic field generated by the magnetic field generating assembly.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of

establishing that all elements of the invention are taught or suggested in the prior art.  
MPEP §2143.03.

Claims 1-3, 6-8, 11 and 16

Regarding Claims 1, 6, 11 and 16, the Examiner acknowledges that Aoki does not disclose a plurality of geometric shapes each having at least five sides for arranging the plurality of shims along, and looks to Rapoport to cure this deficiency. However, in looking to Rapoport, the Examiner appears to overlook the teaching of Rapoport that includes ***shim blocks 186 having a regular polygonal shape and being sized to fit the channels 188***. (Paragraphs [0060]-[0062]). In viewing Aoki and Rapoport in their totality, Applicant finds no teaching, suggestion, or motivation, to combine Aoki, having magnetic pellets 15 arranged in concentric circles, with Rapoport, having ***shaped magnetic shims 186 sized to fit in shaped channels 188***, to arrive at the claimed invention. Accordingly, Aoki in combination with Rapoport is absent a teaching, suggestion, or motivation, to arrive at a plurality of shims ***arranged along*** a plurality of concentric geometric shapes ***each having at least five sides***, as claimed in the instant invention.

Regarding Claims 6 and 16 specifically, Applicant finds no teaching, suggestion, or motivation, in Aoki or Rapoport, taken singly or in combination, to arrive at a first plurality of shims arranged in ***a series of columns***, and a second plurality of shims arranged in ***a series of rows, where the rows are normal to the columns***, as specifically claimed.

Regarding Claim 11, Applicant has canceled Claim 11 and amended Claim 12 to include the elements of Claim 11, which is discussed later in this paper.

Regarding Claims 2, 3, 7 and 8, dependent claims inherit all of the limitations of the respective parent claim.

Claims 4, 5, 9, 10, 12-15, and 17-20

Regarding Claims 4, 5, 9, 10, 12, 15, 17 and 20, the Examiner alleges that Aoki discloses at least one shim (referencing Figure 2, items 11 and 14), and face surfaces

(referencing Figure 2, item 13), wherein the at least one shim (referencing Figure 2, item 12) is arranged such that the face surfaces are aligned with a direction of the magnetic field generated by the magnetic field generating assembly. (Paper 5, paragraph 7).

In making this allegation, the Examiner appears to be first considering items 11 and 14 of Aoki to be the at least one shim, and then considering item 12 to be the at least one shim, where in contradiction to this assertion, Aoki itself considers item 15 to be the shim (magnetic pellet). Furthermore, the Examiner earlier referenced item 15 of Aoki to be one of the plurality of shims. (Paper 5, paragraph 4, page 3). In viewing the teachings of Aoki, Applicant understands Aoki to be teaching a shim (magnetic pellet) 15 that is placed in holes 12 of holder disk 13, where the face surfaces of shim 15 are ***aligned normal to*** a direction of the magnetic field generated by the magnetic field generating assembly (Figures 1 and 2). Accordingly, and in contradiction to the claimed invention, Aoki does not provide a suggestion, teaching, or motivation, to arrive at a shim of a plurality of shims having face surfaces ***aligned with*** a direction of the magnetic field generated by the magnetic field generating assembly, as claimed in the instant invention.

Regarding Claim 4 specifically, Applicant has canceled Claim 4 and has added new independent Claim 27 that includes the elements of Claims 1 and 4. In newly added Claim 27, Applicant claims, inter alia, a plurality of shims ***arranged along*** a plurality of concentric geometric shapes ***each having at least five sides***, and wherein at least one shim has face surfaces ***aligned with*** a direction of the magnetic field generated by the magnetic field generating assembly. Accordingly, and for at least the reasons discussed previously, Applicant submits that Aoki and Rapoport, either singly or in combination, fail to teach each and every element of the claimed invention, and fail to suggest, teach, or motivate, one skilled in the art to arrive at the claimed invention.

Regarding Claims 13, 14, 18 and 19, dependent claims inherit all of the limitations of the respective parent claim.

### Claims 21-26

Regarding Claims 21-23, the Examiner makes reference to the rejection of Claims 1 and 4.

For at least the reasons discussed previously, Applicant submits that Aoki and Rapoport, either singly or in combination, fail to teach each and every element of the claimed invention, and fail to suggest, teach, or motivate, one skilled in the art to arrive at the claimed invention, and the Examiner has not stated with specificity where in Aoki and Rapoport there is such a suggestion, teaching, or motivation.

Regarding Claims 24-26, dependent claims inherit all of the limitations of the respective parent claim.

### Claims 27-31

Regarding Claims 27-31 generally, and for at least the reasons discussed previously, Applicant submits that Claims 27-31 are patentable over Aoki and Rapoport, and respectfully requests entry and allowance of the claimed invention. Support for Claims 27-31 are provided in the specification as originally filed at least at paragraphs [0030]-[0032], and in Figures 1, 3, 4, 7 and 8.

Regarding Claim 28 specifically, Applicant finds no teaching in Aoki and Rapoport, either singly or in combination, to arrive at a plurality of shims arranged along a plurality of concentric geometric shapes each having at least five sides, wherein each of the plurality of concentric geometric shapes are adapted to receive more than one of the plurality of shims, as claimed in the instant invention.

Regarding Claim 29 specifically, Applicant finds no teaching in Aoki and Rapoport, either singly or in combination, to arrive at each of the plurality of shims having a shape other than the shape of the plurality of concentric geometric shapes, as claimed in the instant invention.

Regarding Claim 30 specifically, Applicant finds no teaching in Aoki and Rapoport, either singly or in combination, to arrive at a plurality of shims arranged along one of the plurality of concentric geometric shapes that include a permanent magnet, a

magnetic material other than a permanent magnetic, or any combination comprising at least one each of the foregoing materials, as claimed in the instant invention.

Regarding Claim 31 specifically, Applicant finds no teaching in Aoki and Rapoport, either singly or in combination, to arrive at a plurality of shims arranged along one of the plurality of concentric geometric shapes that include a first shim having a first amount of material and a second shim having a second different amount of material, as claimed in the instant invention.

Dependent claims inherit all of the limitations of the parent claim.

In view of the foregoing, Applicant submits that Aoki and Rapoport, either singly or in combination, fail to teach or suggest each and every element of the claimed invention and disclose substantially different inventions from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a).

In light of the foregoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §103(a) have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.


The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

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